

11/15 Radical Review

✓ ← Radical

$\sqrt{36}$
= 6

principal
square root
(positive
value)

36

9 4

3 3 2 2

$3 \cdot 2 = 6$

$\sqrt{50} = 5\sqrt{2}$

10 5

2 5

$5\sqrt{2}$

Steps

1. Factor tree
2. At prime #s, circle each pair and box the other prime #s
3. Write each pair once on outside
4. Write each single once on inside

"Couples go out, singles stay in"

$$\begin{array}{c} \sqrt{45} \\ \swarrow \searrow \\ \boxed{5} \quad 9 \\ \swarrow \searrow \\ \boxed{3} \quad \boxed{3} \\ \boxed{3\sqrt{5}} \end{array}$$

$$\begin{array}{c} \sqrt{56} \\ \swarrow \searrow \\ 8 \quad \boxed{7} \\ \swarrow \searrow \\ \boxed{2} \quad 4 \\ \swarrow \searrow \\ \boxed{2} \quad \boxed{2} \\ \boxed{2\sqrt{14}} \end{array}$$

$$\begin{array}{c} \sqrt{24} \\ \swarrow \searrow \\ 6 \quad 4 \\ \swarrow \searrow \swarrow \searrow \\ \boxed{2} \quad \boxed{3} \quad \boxed{2} \quad \boxed{2} \\ 2\sqrt{6} \end{array}$$

$$\begin{array}{c} \sqrt{600} \\ \swarrow \searrow \\ \boxed{2} \quad 300 \\ \swarrow \searrow \\ 150 \quad \boxed{2} \\ \swarrow \searrow \\ 75 \quad 2 \\ \swarrow \searrow \\ 25 \quad \boxed{3} \\ \boxed{5} \quad \boxed{5} \end{array}$$

$10\sqrt{6}$

Do

1. $\sqrt{75}$



$5\sqrt{3}$

2. $\sqrt{48}$



$$\sqrt{30}$$

$$3 \cdot 10$$

$$5 \cdot 2$$

If no couples, it is simplified

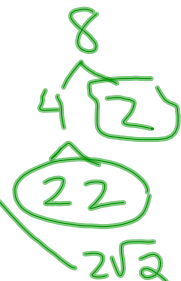
$$\boxed{\sqrt{30}}$$

Number on outside

$5\sqrt{8}$

$5 \cdot 2\sqrt{2}$

$\boxed{10\sqrt{2}}$



$2\sqrt{2}$

$3\sqrt{12}$



$3 \cdot 2\sqrt{3}$

$\boxed{6\sqrt{3}}$



$2\sqrt{3}$

Do
 ① $4\sqrt{18}$
 4 $3\sqrt{2}$
 $12\sqrt{2}$

w/ Variable
 $\sqrt{25x^2} = 5x$

Do Number 1st

$\begin{array}{c} 25 \\ \swarrow \downarrow \searrow \\ 5 \end{array}$ $\begin{array}{c} x^2 \\ \swarrow \downarrow \searrow \\ x \end{array}$

$\sqrt{63y^3}$

$\begin{array}{c} y^3 \\ \swarrow \downarrow \searrow \\ y \end{array}$

$\begin{array}{c} 63 \\ \swarrow \downarrow \searrow \\ 7 \end{array}$ $\begin{array}{c} 9 \\ \swarrow \downarrow \searrow \\ 3 \end{array}$

$3y\sqrt{7y}$

$\sqrt{18x^3y^4}$

$\begin{array}{c} x^3 \\ \swarrow \downarrow \searrow \\ x \end{array}$

$\begin{array}{c} y^4 \\ \swarrow \downarrow \searrow \\ y \end{array}$

$\begin{array}{c} 18 \\ \swarrow \downarrow \searrow \\ 3 \end{array}$ $\begin{array}{c} 6 \\ \swarrow \downarrow \searrow \\ 2 \end{array}$

$3xy^2\sqrt{2x}$

Multiplicationinside \times insideoutside \times outside

ex

$$8\sqrt{2} \cdot 5\sqrt{6}$$

$$40\sqrt{12}$$

$$40 \cdot 2\sqrt{3}$$

$$80\sqrt{3}$$

12
3 4
22

ex

$$\sqrt{5} \cdot \sqrt{10}$$

$$\sqrt{50}$$

$$5 \sqrt{10}$$

$$5 \sqrt{2}$$

Do

$$4\sqrt{2} \cdot 3\sqrt{8}$$

$$12\sqrt{16}$$

$$12 \cdot 4$$

$$48$$

$$12$$

$$8 \sqrt{2}$$

$$4 \sqrt{2}$$

$$22$$